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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,154	06/14/2002	Ronald G. Fink	6556.4814	5102
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BOC, INC. 575 MOUNTAIN AVE MURRAY HILLS, NJ 07974-2064				
			EXAMINER VERSTEEG, STEVEN H	
			ART UNIT 1753	PAPER NUMBER

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/064,154

Applicant(s)

FINK ET AL.

Examiner

Steven H VerSteeg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2004.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-22 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1 and 3-22 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 22 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 10 and 22 are objected to because of the following informalities: “the an exterior” needs corrected in claim 10 at line 2; in line 2 of claim 22, the phrase “a compound selected from the consisting of” appears to be an attempt to use Markush language, but is in improper format and needs to be corrected; and “on” should be “an” in claim 22 at line 5. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
3. Claim 9 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation that there is “at least one” particulate filter is new matter. There is support for 2 filters in the specification as originally filed, not more than 2 as is now claimed.
4. Claims 7 and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 19 is not properly enabled. Claim 19 requires the target to comprise “a **compound** consisting of titanium dioxide,

silver and copper” (emphasis added). There is no known compound containing titanium dioxide, silver, and copper. Applicant needs to provide guidance in the specification as to the specifics of the compound. In claim 7, Applicant requires a secondary element comprising a target “compound” comprising a certain amount of titanium dioxide, a certain amount of copper, and a certain amount of silver. The situation of there being some titanium dioxide and any of copper and/or silver would be an enablement problem because the specification provides no guidance as to the compound’s chemistry. There is no known compound that contains titanium dioxide and either silver or copper or both.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 3-18, and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
7. In claims 1, 7, 14, and 22, Applicant claims a compound selected from the group consisting of a certain amount of titanium dioxide, a certain amount of silver, and a certain amount of copper. The requirement of copper or silver is out of scope with the limitation because the limitation requires a “compound” yet silver and copper are merely elements.
8. Claims 3-13 depend from claim 1 and contain all of the limitations of claim 1. Therefore, claims 3-13 are rejected for the same reasons as claim 1.
9. Claims 15-18 depend from claim 14 and contain all of the limitations of claim 14. Therefore, claims 15-18 are rejected for the same reasons as claim 14.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 4, 6, 8-10, 14-16, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0019738 A1 to Reisfeld et al. (Reisfeld).

12. For claim 1, Applicant requires a high volume, wall-mountable air sanitation apparatus for disinfecting and removing contaminants such as pollutants, organisms and odors from air with high energy UV light and ozone, comprising: a casing with an interior, a first side and a second side; a means for moving air located at the first side of the casing, the air moving across at least one target comprising a target compound, said target compound selected from the group consisting of up to 30% titanium dioxide, up to 30% copper and up to 30% silver, by weight, and an elongated high energy UV light source adapted to direct UV light toward the air and the target whereby the UV light striking the air and the target in the presence of water will generate at least one oxidant selected from the group consisting of hydro-peroxides, super-oxide ions and hydroxyl radicals.

13. Reisfeld discloses a photocatalytic air purifier (abstract) that is suitable for residential applications and can be installed in original equipment of retrofitted [0008] and can be wall-mounted (Figure 6). The apparatus comprises a casing (Figure 1), means for moving air 100, a target compound containing titanium dioxide [0025], and an elongated UV light source 20.

14. Reisfeld does not specifically disclose the amount of titanium dioxide present. Having an amount of titanium dioxide to be present is disclosed. The amount to use would only require reasonable experimentation. Thus, having less than 30% titanium dioxide would be obvious because one of ordinary skill in the art would only need reasonable experimentation with a reasonable probability of success to determine the amount of titanium dioxide to be less than 30% by weight.
15. For claim 4, Applicant requires the target to comprise mesh and be located between the UV light source and the air. In Figure 1, the target is between the UV light source and the air. The target is a mesh [0025].
16. For claim 6, Applicant requires a secondary element a predetermined distance from the wire mesh. Figure 1 shows there to be several mesh filters.
17. For claim 8, Applicant requires the means for moving the air to comprise a fan. Reisfeld uses a fan 100.
18. For claim 10, Applicant requires the light reflected by the UV light to be visible from the exterior of the casing through the blades of the fan. Figure 1 shows that the orientation of the items allows for the UV light to be visible through the vent.
19. For claim 9, Applicant requires at least one particulate filter for removing particulates from the air. Reisfeld discloses the limitation by using a combed filter element 14.
20. For claim 14, Applicant requires an apparatus for efficiently disinfecting and removing contaminants such as pollutants, organisms, and odors from air with high energy UV light, comprising a high energy UV light source capable of generating ozone from oxygen in air; a mesh target located at least partway between the high energy UV light source and the air, the

target including a target compound comprising at least one selected from the group consisting of up to 30% titanium dioxide, up to 30% copper and up to 30% silver, by weight, whereby the UV light and the target compound generate in the presence of water at least one oxidant selected from the group consisting of hydro-peroxides, super-oxide ions and hydroxyl radicals, and a secondary target element located a predetermined distance from the mesh target, the secondary target element including the target compound selected from the group consisting of up to 30% titanium dioxide, up to 30% copper, and up to 30% silver, by weight, whereby at least a portion of the UV light that passes through the mesh target strikes the secondary target element, thereby generating an additional oxidant selected from the group consisting of hydro-peroxides, super-oxide ions and hydroxyl radicals.

21. Reisfeld discloses an apparatus comprising a UV light source 20, mesh target [0025] of titanium dioxide, and a secondary target 12' as noted above.
22. For claim 15, Applicant requires the air to flow generally in the volume between the mesh targets. Figure 1 shows that the air will flow between the targets.
23. For claim 16, Applicant requires the secondary target to act as a conduit for the moved air. There is no reason to believe that the target in Reisfeld will not act in the same manner as that claimed by Applicant.
24. For claim 22, Applicant requires a wall mountable method for treating air comprising directing the air toward a target comprising a compound selected from up to 30% titanium dioxide, up to 30% silver, and up to 30% copper by weight and directing UV light toward the target at a wavelength sufficient to generate ozone from the oxygen in the air to generate at least

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an oxidant selected from the group consisting of hydro-peroxides, super-oxide ions and hydroxyl radicals from interaction with the compound in the presence of water.

25. As noted above, the amount of titanium dioxide would be obvious. The method of using the apparatus discussed in claims 1 and 14 is disclosed.

26. Claims 3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0019738 A1 to Reisfeld et al. (Reisfeld) in view of US 6,589,489 B2 to Morrow et al. (Morrow).

27. For claims 3 and 17, Applicant requires the target to comprise silica gel. Reisfeld is described above, but does not disclose the target to comprise silica gel. Reisfeld discloses that any suitable material may be used as the substrate for the titanium dioxide.

28. Morrow discloses that the dielectric body of the porous dielectric material onto which titanium dioxide is attached in a photocatalytic air purification system can be silica gel (col. 4, l. 28-53).

29. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Reisfeld to utilize silica gel as the substrate in the photocatalytic reactor because silica gel is a well known and suitable substrate for such an apparatus.

30. Claims 5, 11-13, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0019738 A1 to Reisfeld et al. (Reisfeld) in view of US 5,656,242 to Morrow et al. (Morrow II).

31. For claim 5, Applicant requires the UV light source to emit 185-254 nm. Reisfeld does not disclose the specifics of the UV source.

32. Morrow II discloses that air purifier lamps should be 184-254 nm in wavelength because it is the standard emission spectra for mercury lamps and provides the safest atmosphere for humans in the presence of oxygen.

33. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Reisfeld to utilize a mercury lamp for the UV lamp because it is the standard emission that provides a safe atmosphere for humans.

34. For claims 11 and 18, Applicant requires the UV light source to be one or more low-pressure mercury UV lights. As noted above, the mercury UV light is obvious.

35. For claim 12, Applicant requires at least one mesh target surrounding the UV light. For claim 13, Applicant requires a mesh target to be affected by more than one UV light source. Reisfeld discloses several targets surrounding the UV light source (Figure 1) and several light sources affecting a single mesh target (Figure 1).

Response to Amendment

36. The objection to the drawings presented in the office action mailed April 20, 2004 is withdrawn in light of the amendment.

37. The objection to the specification presented in the office action mailed April 20, 2004 is withdrawn in light of the amendment.

38. The claim objections presented in the office action mailed April 20, 2004 are withdrawn in light of the amendment, but new objections are presented above.

39. The 112-second paragraph rejections presented in the office action mailed April 20, 2004 are withdrawn in light of the amendment, but new rejections are presented above.

40. The 102(e) rejection of claims 1, 4, 6, 8-10, and 14-16 over Reisfeld presented in the office action mailed April 20, 2004 is withdrawn in light of the amendment, but a new rejection is presented above.

41. The 103(a) rejection of claims 3 and 17 over Reisfeld in view of Morrow presented in the office action mailed April 20, 2004 stands.

42. The 103(a) rejection of claims 5, 11-13, and 18 over Reisfeld in view of Morrow II presented in the office action mailed April 20, 2004 stands.

Allowable Subject Matter

43. The indicated allowability of claims 7 and 19-21 and the subject matter that used to be in claim 2 (now present as claim 1) is withdrawn in view of further consideration of the Reisfeld reference and further consideration of the limitations in "compound" requirement. Rejections are presented above.

44. **PLEASE NOTE THAT THE INSTANT OFFICE ACTION IS A NON-FINAL OFFICE ACTION.**

General Information

For general status inquiries on applications not having received a first action on the merits, please contact the Technology Center 1700 receptionist at (571) 272-1700.

For inquiries involving Recovery of lost papers & cases, sending out missing papers, resetting shortened statutory periods, or for restarting the shortened statutory period for response, please contact Denis Boyd at (571) 272-0992.


For general inquiries such as fees, hours of operation, and employee location, please contact the Technology Center 1700 receptionist at (571) 272-1300.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H VerSteeg whose telephone number is (571) 272-1348. The examiner can normally be reached on Mon - Thurs (6:30 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Steven H VerSteeg
Primary Examiner
Art Unit 1753

shv
November 16, 2004